EVALUATING THE ROLES OF MATHEMATICS TEACHERS TOWARD ENHANCING STUDENTS' PARTICIPATION IN CLASSROOM ACTIVITIES

by

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Abstract

This study was undertaken to evaluate the roles of Mathematics teachers toward enhancing students' participation in classroom activities. A survey research design was adopted to elicit information from ninety six mathematics teachers from thirty-two secondary schools in Onitsha Education zone. Four research questions and one null hypothesis guided the study. The study focused on four domains of activities, which are teaching style, quality of teaching, kinds of decisions based on homework performance, and kinds of feedback based on assessment outcomes. Valid and reliable questionnaire structured in a four-point rating scale containing 20 items were used to elicit information from the respondents and reliability coefficient of 0.76 was established using split - half method. In analyzes, mean was used to answer the research questions and Z- test was adopted to test the null hypothesis at 0.05 level of significance. The results of the study indicated that there is no significance difference on the roles of male and female mathematics teachers toward enhancing students' participation in classroom activities. Thus, this paper recommends that Mathematics teachers should encourage students to participate in classroom activities.

Introduction

The classroom activities are the process that brings the curriculum into contact with students and through which educational goals are to be achieved. The

quality of classroom teaching is a key to improving students learning. Findings of research suggested that several classroom instructional activities were associated with achievement and noted that the ways in which instructional activities are presented in classroom context affects students' achievement (Anderson and Brophy 1998). Moreover, Sommer (1999) found that quality of instruction influence achievement at the class level. Instructional activities in class include variables that describe aspects of classroom instruction such as quality of teaching style, teaching style and classroom assessment environment.

The teaching context is established through preconceptions held by the teacher about the process of learning and how that might be facilitated (Mouly 1982). Perceptions of the learning process at various levels of constructive inform different teaching practices which in turn lead to modification of the students' perception of the learning environment. It was found that quality of teaching was a significant predicator of students' achievement even after controlling for effects of students' characteristics (Sommer 1999). In addition, Cavas (2002), found that quality of teaching did not have statistically significant effect on achievement at classroom level.

An important part of any instructional setting is the teaching style. Research results suggested that teaching style exerted effects on student achievement that were independent of students' characteristics (Smith 1987).Both teaching styles (teacher and learner - centered) recognize the students as a key factor in improving students' achievement.

The teacher – centered style places control for learning in the hands of the teacher who decided what students would learn and how the teacher uses his expertise in content knowledge to help learner make connections. Teacher provides a variety of instructional methods and techniques for helping learners construct their learning and develop a system for applying knowledge and theory (Brown , McNamara , Olwen , Jones , 2003). Cooper (1998), found that student learn more in classes where they spend most of their time being taught or supervised by teachers, rather than working on their own**.**

The classroom assessment environment has been defined as the context created for learners by several aspects of teachers' use of formative and summative evaluations of their work, and assessment should as far as possible be integral to the normal teaching and learning programmed. For instance testing should be considered as an opportunity to learn (Anderson and Prophy 1998).Research has indicated that the amount of homework given by teacher was found to have contradictory effect on achievement. For instance, Baumer (2002) showed that the frequency of homework assignments had a positive effect on achievement gains. The assignment of appropriate homework can stimulate independent engagement in learning tasks. According to Gerades (1991), textbook-based homework was associated with higher

achievement Feedback is required because students need information about their accomplishments in order to grow and progress . Feedback related to assessment outcomes helps learners become aware of any gaps that exist between their desired goal and their current knowledge, understanding skills and guides them through actions necessary to achieve the goal (Richard 1994).

Thus the study was design to evaluate the roles of Mathematics teachers toward enhancing students' participation in classroom activities which shall focus on four domains of activities, which are practiced in classroom thus: teaching style, quality of teaching, kinds of decisions based on homework performance, and kinds of feedback based on assessment outcomes

Problem of the Study

Available research findings attributed the poor performance in mathematics to problem of inadequate training facilities that can bring about the best in the Nigerian child and lack of instructional materials (Adedayo, 2001); Poor teaching of mathematics because of its nature (Amoo, 2001). Poor environmental background and poor preparation at the pre-primary, primary education, lack of requisite skills and mathematical techniques; lack of interest in mathematics by the students resulting to poor copying of mathematics corrections in their note books (Amoo, 2003).

Enhancing student's participation in different domains of classroom activities needs to be searched and studied to uncover its fact to know its characteristics and advantages. Many researchers studied school activities through observation of teachers, there are shortages and differences in teacher's role towards enhancing student's participation in classroom activities. Thus, the researchers decided to conduct the present study.

Research Questions

1. What are the roles of mathematics teachers as regards teaching styles that will enhance students' participation in classroom activities?

2. What are the roles of mathematics teachers as regards quality of teaching that will enhance the students' participation in classroom activities?

3. What kinds of decision based on home work carried out by the mathematics teachers will enhance the students' participation in classroom activities?

4. What kinds of feedback based on assessment outcomes made by the mathematics teacher will enhance the students' participation in classroom activities?

Research Hypothesis

Ho : There is no significance difference in the roles of male and female mathematics teachers toward enhancing students participation in classroom activities.

Method

This study was undertaken to determine the roles of Mathematics teacher toward enhancing students' participation in classroom activities. A survey research design was adopted to elicit information from ninety six mathematics teachers from thirty-two secondary schools in Onitsha Education zone. Four research questions and one null hypothesis guided the study. The study focused on four domains of activities, which are practiced in classroom. The domains are teaching style, quality of teaching, kinds of decisions based on homework performance, and kinds of feedback based on assessment outcomes. Valid and reliable questionnaire structured in a four-point rating scale containing 20 items were used to elicit information from the respondents and reliability coefficient of 0.76 was established using split - half method. In analyzes, mean was used to answer the research questions and Z- test was adopted to test the null hypothesis at 0.05 level of significance.

Results

Research Question 1: What are the roles of mathematics teachers as regards teaching styles that will enhance students' participation in classroom activities?

Table 1

Item / Domains	**Domain and items' content**	**SA**	**A**	**D**	**SD**	**N**	**X**	**Decision**
	TEACHING STYLE							
1	Mathematics teachers should investigate whether students know the previous learning.	34	42	13	7	96	3.07	Accepted
2	Mathematics teachers should teach students how to solve problems.	48	38	3	7	96	3.32	Accepted
3		38	33	13	12	96		Accepted

	Mathematics teachers should enhance the positive behavior.						3.01	
4		42	50	3	1	96		Accepted
5	Mathematics teachers should help students to learn math concepts.	38	42	7	9	96	2.76	Accepted
	Mathematics teachers should ask the students what they know related to a new topic.						3.16	

From table 1, it indicates that all the items have the mean above 2.50 which shows that mathematics teachers' style of teaching enhances the students' participation in the classroom with the criterion mean of 3.06.

Research Question 2

What are the roles of mathematics teachers as regards quality of teaching that will enhance the students' participation in classroom activities?

Table 2

Item / Domains	**Domain and items' content**	**SA**	**A**	**D**	**SD**	**N**	**X**	**Decision**
	QUALITY OF TEACHING							
1	Mathematics teachers should explain reasoning behind an idea.	48	35	8	5	96	3.31	Accepted
2	Mathematics teachers should use tables and charts to clarify the lesson of mathematics.	52	36	3	5	96	3.41	Accepted
3		53	38	4	1	96	3.49	Accepted

4	Mathematics teachers should assign students to test book homework	32	28	12	24	96	2.71	Accepted
5	Mathematics teachers should assign students to do small investigation in classroom. Mathematics teachers should assign students to do individual project.	52	44	-	-	96	3.54	Accepted

From table 2, virtually all the items have the mean above 2.50 which indicates that mathematics teachers' quality of teaching enhances students' participation in the class room.

Research Question 3: What kinds of decision based on home work carried out by the mathematics teachers will enhance the students' participation in classroom activities?
Table 3

Item / Domains	**Domain and items' content**	**SA**	**A**	**D**	**SD**	**N**	**X**	**Decision**
	Kind of decisions based on homework performance							
1	Mathematics teachers should collect, correct and return homework assignments.	42	49	3	2	96	3.36	Accepted
2	Mathematics teachers should use homework to contribute toward	50	46	-	-	96	3.52	Accepted
3		49	43	3	1	96	3.40	Accepted

	students' grades							
4	Mathematics teachers should ask the students to correct their own homework assignments in classroom.	41	38	8	9	96	3.20	Accepted
5	Mathematics teachers should use homework as basis for class discussion. Teacher gives feedback on homework to whole class.	45	43	5	3	96	2.60	Accepted

From table 3, all the items have the mean above 2.50 which indicates that kind of decision taken by the mathematics teachers based on home work performance enhances students' participation in classroom activities with the criterion mean of 3.22.

Research Question 4

What kinds of feedback based on assessment outcomes made by the mathematics teacher will enhance the students' participation in classroom activities?

Table 4

Item / Domains	Domain and items' content	SA	A	D	SD	N	X	Decision
	KIND OF FEEDBACK BASED ON ASSESSMENT OUTCOMES							
1	Mathematics teachers should give response to students' questions in class.	49	47	-	-	96	3.51	Accepted

2	Mathematics teachers should provide feedback to students.	35	49	4	8	96	3.16	Accepted
3	Mathematics teachers should diagnose learning problems.	38	32	18	8	96	3.04	Accepted
4	Mathematics teachers should provide grades for students.	41	55	-	-	96	3.43	Accepted
5	Mathematics teachers should report to the parents on the academic progress of their children in mathematics.	40	56	-	-	96	3.42	Accepted

From table 4, all the items have the mean above 2.50 which indicates that the kinds of feedback based on assessment outcomes made by the mathematics teacher enhance the students' participation in classroom activities with the criterion mean of 3.31.

Table 5

Decision table of z – test analysis of the mean responses of the roles of male and female mathematics teachers toward enhancing students' participation in classroom activities.

Sources of variation	**N**	**X**	**SD**	**P<**	**Df**	**Z-cal.**	**z-crit.**	**Decision**
Male mathematics teachers	23 73	3. 3.01	1.87 1.72	0.05	94	1.03	1.96	
Female mathematics teachers								Accepted Ho

Table 5 above showed that the calculated value is less than the critical value ie z- cal. (1.03) < z- crit. (1.96). Thus the null hypothesis is accepted. Hence, there is no significance difference in the roles of male and female mathematics teachers toward enhancing students' participation in classroom activities.

Discussion of Results

From table 1, it indicates that all the items have the mean above 2.50 which shows that mathematics teachers' style of teaching enhances the students' participation in the classroom with the criterion mean of 3.06.

From table 2, virtually all the items have the mean above 2.50 which indicates that mathematics teachers' quality of teaching enhances students' participation in the class room.

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Table 5 above showed that the calculated value is less than the critical value ie z- cal. (1.03) < z- crit. (1.96). Thus the null hypothesis is accepted. Hence, there is no significance difference in the roles of male and female mathematics teachers toward enhancing students' participation in classroom activities.

In addition, the results revealed that the mean of the whole items of the mentioned domains was 4.14 and this mean is considered very high according to a four-point of likert scale. This result mirrors the mathematics teachers deepen and intensify students' participation in classroom activities.

Conclusion

This study shows that there is a positive role for mathematics teachers of the secondary schools towards enhancing students' participation in classroom activities. The domains as perceived by the participants are as follows:- Teaching style, Quality of teaching, Classroom assessment, Kinds of decision based on homework performance and Kinds of feedback based on assessment outcomes.

Recommendations

1. Mathematics teachers should encourage students to participate in classroom activities.
2. Mathematics teachers should help the students to learn mathematics concepts.
3. Mathematics teachers should assign students to do small investigations and do individual project in classroom.
4. Mathematics teachers should collect, correct and return marked homework or assignments to the students.
5. They should provide feedback to students and diagnoses learning problems.

References

Adedayo, A.O. (2001). "The place of mathematics in Nigeria secondary school course on effective teaching of mathematics phase 2", in *ABACUSJournal of Mathematical Association of Nigeria* 27 (1) 30

Amoo, S.A. (2003) . "Survey of difficult mathematics topics in junior secondary school, Implication for mathematics education and technological breakthrough (in the Press)

Anderson CW, Brophy JE (1998). "Relationship between Classroom Behaviors and student Outcomes in Junior High School Mathematics and English Classes". *American Educational Journal,* 17: 43-60.

Brown T; McNamara O, Olwen H, Jones L (2003). "Primary Student Teacher Understanding of Mathematics and its Teaching". *British Educational Research Journal,* 29: 299-323.

Baumer T (2002). *Language Learning Through Action:* New York, Harber.

Cavas A (2002). "The use of computer technology in seventh grade science topics which contain mathematics". *Paper Presented at International Special Education Congress 2002,* University of Manchester, U. K.

Cooper S (1998). *Towards Enhancing Mathematics Activities in Classroom*. Ohio: Ohio University.

Gerades P (1991). "Changing Mathematics Education in Mozambique". *Educational Studies in Mathematics,* 12: 455-466.

Mouly GJ (1982). *Psychology for Teaching.* Boston Ally and Bacon, Inc.

Richard S (1994). "Supplementary Classroom Instruction and Technology". *Computer Conferencing,* 34: 20- 25.

Smith L (1987). "Verbal clarifying behaviors, mathematics student's participation & attitudes". *School Science and Mathematics,* 87: 41-49.

Sommer K (1999)." Effect of Class size on student achievement and teacher behaviors in third grade", *DAI***,** 51:599.

Steinback M, Gwizdala J (1995). "Gender Differences in Mathematics Attitudes of secondary Student". *School Science and Mathematics,* 95: 36-41.